We claim:

1. An apparatus for reducing the aerodynamic base drag of a bluff body in a flowstream substantially parallel to a longitudinal centerline of the bluff body, said bluff body having a leading end, a trailing end, a top surface, opposing left and right side surfaces, and a base surface at the trailing end substantially normal to the longitudinal centerline of the bluff body, said apparatus comprising:

a pair of lift surfaces located alongside at least one of the top surface and left and right side surfaces of the bluff body and extending to lift surface tips for generating in the flowstream a pair of counter-rotating trailing vortices which confluence together in the wake of the bluff body in a direction substantially orthogonal to the flowstream, and said confluence drawing the flowstream in and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

2. The apparatus of claim 1,

further comprising at least one additional pair of said lift surfaces for generating in the flow stream a corresponding number of additional pairs of counter-rotating trailing vortices.

3. The apparatus of claim 2,

wherein the pairs of lift surfaces are adapted to confluence the counter-rotating trailing vortices together in the same direction.

4. The apparatus of claim 1,

wherein the pair of lift surfaces extend to the lift surface tips in substantially opposite directions from each other.

5. The apparatus of claim 1,

wherein the pair of lift surfaces are located alongside the left and right side surfaces of the bluff body and extend to the lift surface tips in substantially opposite

directions from each other for generating a pair of counter-rotating trailing vortices which confluence together in a downward direction in the wake of the bluff body to draw the flowstream passing over the top surface down and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

6. The apparatus of claim 5,

further comprising at least one additional pair of said lift surfaces located alongside the left and right side surfaces of the bluff body for generating in the flowstream a corresponding number of additional pairs of counter-rotating trailing vortices, said pairs of lift surfaces adapted to confluence the counter-rotating trailing vortices together in the same direction.

7. An apparatus for reducing the aerodynamic base drag of a bluff body said apparatus comprising:

means for generating in a flowstream at least one pair of counter-rotating vortices alongside the bluff body which confluences together downstream in the wake of the bluff body in a direction substantially orthogonal to the flowstream such that the confluence draws the flowstream around behind a trailing end of the bluff body to raise the pressure in a recirculation zone thereof and reduce the aerodynamic base drag.

8. A vehicle accessory for reducing the aerodynamic base drag of a bluff body vehicle comprising:

a pair of lift surfaces extending to lift surface tips and connectable to the bluff body so that the lift surface tips are positioned substantially alongside the bluff body to generate, in a flow stream substantially parallel to a longitudinal centerline of the bluff body vehicle, a pair of counter-rotating trailing vortices which confluence together downstream in the wake of the bluff body in a direction substantially orthogonal to the flowstream, whereby the confluence draws the flowstream in and around behind a trailing end of the bluff body to raise the pressure in a recirculation zone thereof and reduce the aerodynamic base drag.

9. In a bluff body land-based vehicle having a leading end, a trailing end, a top surface, opposing first and second side surfaces, and a substantially flat base surface at the trailing end substantially normal to a longitudinal centerline of the bluff body, the improvement comprising:

means located alongside at least one of the top surface and first and second side surfaces for generating, in a flowstream substantially parallel to the longitudinal centerline, a pair of counter-rotating vortices which confluence together downstream in the wake of the vehicle in a direction orthogonal to the flowstream such that the confluence induces the flowstream passing over the top surface to turn down and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

10. A method of reducing aerodynamic base drag of a bluff body vehicle adjacent a ground plane in a flowstream substantially parallel to a longitudinal centerline of the bluff body vehicle, said bluff body vehicle having a leading end, a trailing end, a top surface, opposing left and right side surfaces, and a base surface at the trailing end substantially normal to the longitudinal centerline of the bluff body, said method comprising:

generating a pair of counter-rotating vortices from alongside at least one of the top and left and right side surfaces of the bluff body to confluence downstream in the wake of the vehicle in a direction substantially orthogonal to the flowstream, whereby said confluence draws the flowstream in and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

11. The method of claim 10,

wherein the pair of counter-rotating vortices are generated from alongside the left and right sides of the vehicle to confluence downstream in the wake of the vehicle in a downward direction to the flowstream, whereby said confluence draws the flowstream passing over the top surface down and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

12. The method of claim 10 or 11,

wherein a pair of lift surfaces extending to lift surface tips are utilized to induce generation of the pair of counter-rotating vortices as trailing vortices.

13. The method of claim 12,

wherein the pair of lift surfaces extend in substantially opposite directions from each other.

14. The method of claim 12,

further comprising utilizing at least one additional pair of said lift surfaces to induce generation of a corresponding number of additional pairs of counter-rotating trailing vortices.

15. The method of claim 14,

wherein the pairs of counter-rotating trailing vortices are generated to confluence in the same direction.

16. The method of claim 10,

further comprising generating at least one additional pair of said counter-rotating vortices.

17. The method of claim 16,

wherein the pairs of counter-rotating vortices are generated to confluence in the same direction.

18. The method of claim 10,

wherein the bluff body vehicle is a tractor-trailer.

19. A method of reducing aerodynamic base drag of a bluff body vehicle moving in close proximity to a ground plane in a flowstream substantially parallel to a longitudinal

centerline of the bluff body, said bluff body having a base surface at a trailing end thereof, said method comprising:

providing alongside the vehicle upstream of the base surface a pair of lift surfaces extending to lift surface tips, said pair of lift surfaces capable of inducing generation of a pair of counter-rotating trailing vortices when in the flowstream, and said lift surface tips substantially near the bluff body to confluence the vortices downstream in the wake of the vehicle in a direction substantially orthogonal to the flowstream, wherein said confluence draws the flowstream in and around behind the trailing end to raise the pressure on the base surface and reduce the aerodynamic base drag.

20. The method of claim 19,

wherein the pair of lift surfaces are provided on left and right sides of the vehicle upstream of the base to confluence downstream in the wake of the vehicle, with said downwash confluence drawing an upper flow above the vehicle down and around behind the base to raise the pressure on the base and reduce the aerodynamic base drag.

21. The method of claim 19,

wherein the pair of lift surfaces extend in substantially opposite directions from each other.

22. The method of claim 19,

further comprising providing at least one additional pair of said lift surfaces to generate a corresponding number of additional pairs of counter-rotating trailing vortices.

23. The method of claim 22,

wherein the pairs of counter-rotating trailing vortices are generated to confluence in the same direction.

24. The method of claim 19,

wherein the bluff body vehicle is a tractor-trailer.

25. A method of reducing aerodynamic drag of a bluff body in a flowstream substantially parallel to the longitudinal centerline of the bluff body, said method comprising:

generating at least one pair of counter-rotating vortices alongside the bluff body to induce downstream confluence of said vortices in the wake of the bluff body in a direction substantially orthogonal to the flowstream, whereby the confluence draws the flowstream down and around a trailing end of the bluff body to raise the pressure in a recirculation zone thereof and reduce the aerodynamic base drag.